



THE UNIVERSITY OF WISCONSIN—MILWAUKEE / MILWAUKEE, WISCONSIN 53201

DEPARTMENT OF CHEMISTRY

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October 3, 1973

Professor V. B. Kazansky
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Moscow, USSR

Dear Vadim:

First of all, let me express my thanks to you and your wife for your unmatched hospitality during my visit to Moscow. I very much enjoyed my visit to your home and the fine informal hospitality of your excellent table. I also want to express my gratitude for sending me the books on chess for my son. He received them enthusiastically and went to work with his board. Perhaps it will stimulate him to study the Russian language in college; I hope so.

My thanks are also due for the time that you spent chauffeuring me around Moscow and in discussions of scientific matters of mutual interest. I found your work most interesting and I would like to collaborate with you and through you with Candidate G. M. Zhidomirov on the general problem of butene isomerization over catalysts of varying acidity or basicity. I have written Professor Krylov to this effect and a copy of my letter to him is enclosed. It spells out the work which I propose to do here at UWM.

In my opinion, this would be a most affective collaboration. You would study the adsorbed state which is the carbonium ion precursor using your nmr technique. Possibly we could use some zeolites similar to those which I discussed in my lecture at your institute. In these cases the acidity is not sufficiently strong to effect the formation of residues which complicate the system. Of course, we could compare these results with those from more active zeolites, e.g., a nearly pure hydrogen zeolite. Moreover, I suppose that you could involve other spectroscopic techniques as you saw fit. I have some of the kinetic data which is required and would proceed to obtain the remainder. At the same time, I would like to proceed with studies involving more basic oxides where the reaction mechanism is unknown and entirely different from that which occurs on the zeolites. You, too, could probe these with your spectroscopic techniques. As data is evolved Candidate Zhidomirov could contribute materially using his quantum mechanical calculations. In this way, perhaps the three of us collectively could contribute to the understanding of these reactions.

If you accept my invitation for collaboration, I will proceed immediately with the catalyst preparations for the catalyst banks. In my correspondence with Professor Krylov on this matter, we agreed

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in general, to make fairly large preparations (about 1 kilogram) to assure a supply for many workers. In this case, however, I think that I may scale down the preparations to about 100 grams because I am concerned about the problem of getting the same results on scale-up. Besides, neither of us needs very much catalyst for our experimental purposes.

I would hope that our collaboration would be a close one. As I see it, you might select a junior scientist from your institute who is knowledgeable about kinetics and mechanisms for work with me. Then on his return to Moscow he could form a bridge between us. I'm not sure whether I can find someone to send to your laboratory who is already knowledgeable in nmr. I have a very good man in mind who is an expert in kinetics and mechanisms and has worked with me in experiments involving tracers. He is an expert in mass spectrometry, and, I think, is quite capable of learning rapidly the nmr method. Can you make effective use of him, or should I seek to find someone who is a spectroscopist?

I am enclosing the reprints which I promised that I would send. They describe the results which we have obtained on both silica-alumina and zeolite catalysts and the hydrogen bonding phenomenon with the hydrogen zeolites.

Since the big delay appears to be in correspondence, I would appreciate a reply at your earliest convenience. Also, I look forward to seeing you here in Milwaukee before the end of the year. Please extend my kindest personal regards to Professor Minachev.

Cordially yours,

W. Keith Hall
Distinguished Professor
of Chemistry

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Enclosures